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Original Research Article

A Prospective Study of BDSF and Conventional CC Screw Fixation in Fracture of Femur at the Neck Region

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Abstract:

- Conventional CC (Cancellous Cannulated) screws are the traditional choice.
- BDSF (Biomechanically Designed Screw Fixation) offers theoretical advantages:
- Better rotational stability
- Load sharing capabilities

Keywords: Femur, Neck.
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Introduction

- Neck of femur (NOF) fractures are common orthopedic injuries, especially in the elderly.
- Early fixation leads to improved outcomes and reduced complications.
- Study focuses on evaluating two different fixation techniques.

Study Design

- Prospective randomized controlled study
- Duration: 12 months

Sample Size

- Total number of patients: 30
- BDSF group: 12
- CC Screw group: 18
- Random allocation to either group

Methodology

- Clinical evaluation and radiographic confirmation
- Randomized into BDSF or CC screw groups
- Operated by trained orthopedic surgeons
- Followed uniform postoperative protocols

Inclusion Criteria

- Age: 18–70 years
- Fresh neck of femur fractures
- Closed fractures
- Presenting within 72 hours of injury

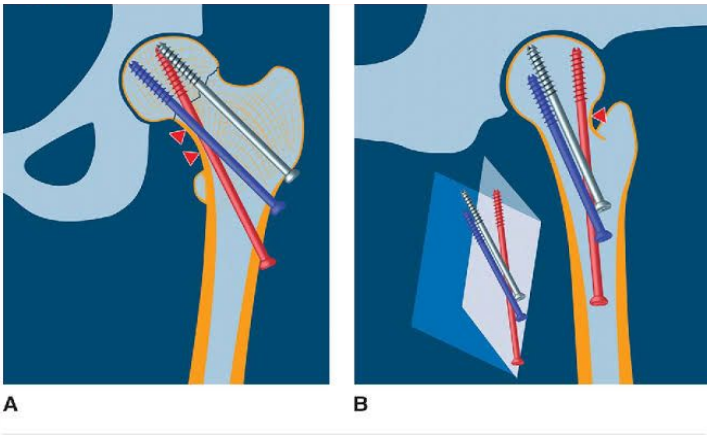
Exclusion Criteria

- Pathological fractures
- Open fractures
- Polytrauma

Non-consenting individuals

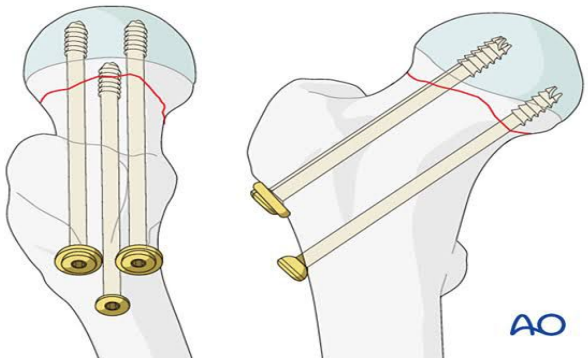
Operative Technique – BDSF

- Screw placement following biomechanical axis
- Improved triangulation and cortical hold
- Image-guided positioning



Operative Technique – CC Screws

- Three parallel cannulated screws
- Triangle configuration (inverted)
- Standardized placement using fluoroscopy

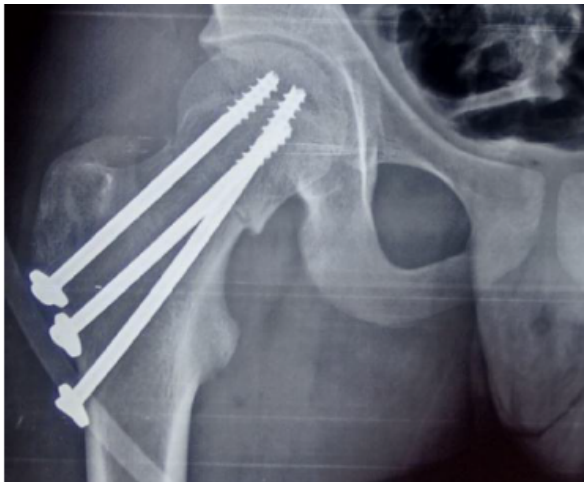


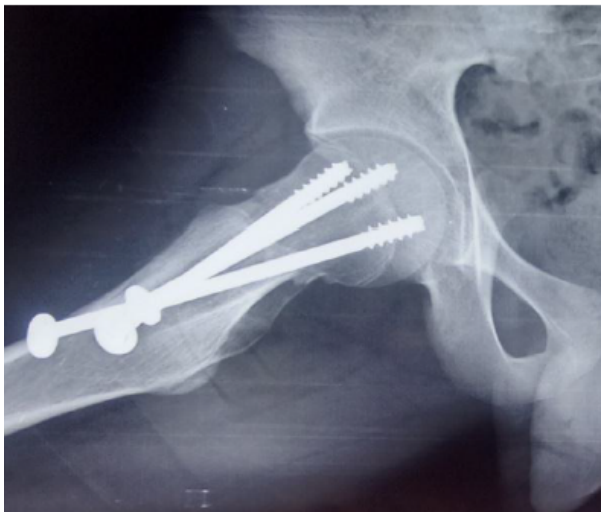
Postoperative Protocol

- Early passive and active mobilization
- Weight-bearing status guided by union signs
- Follow-up at 2, 6, and 12 weeks, then monthly
- Harris Hip Score (HHS) for functional outcome
- Radiographic union time
- Complications (AVN, non-union, infection)

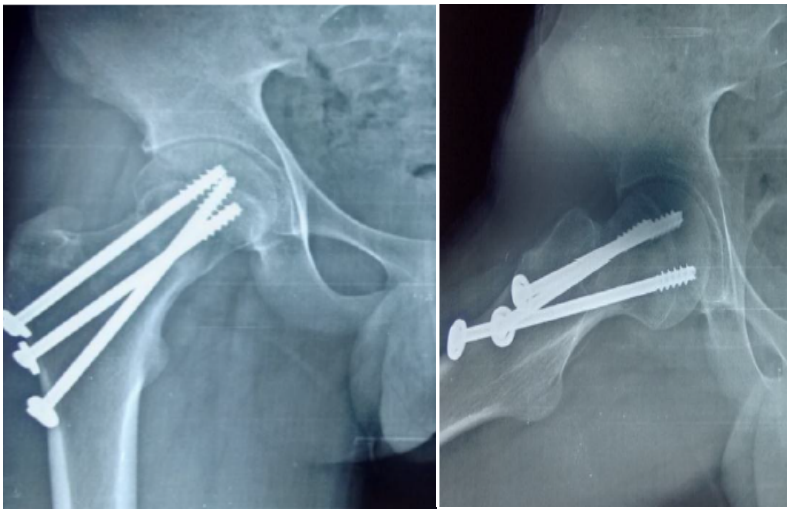
Case 1: 20/Y Male A/h/o RTA

Results

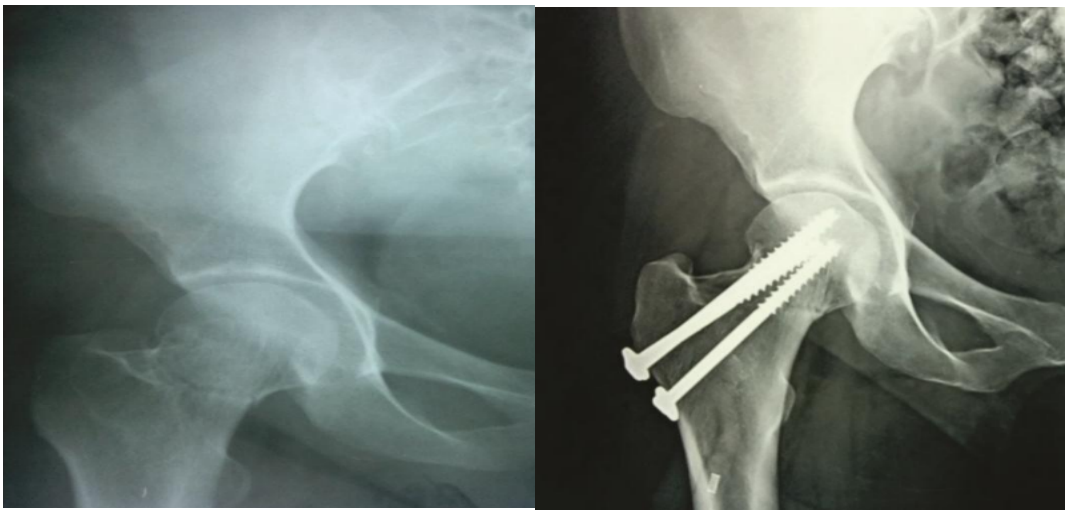




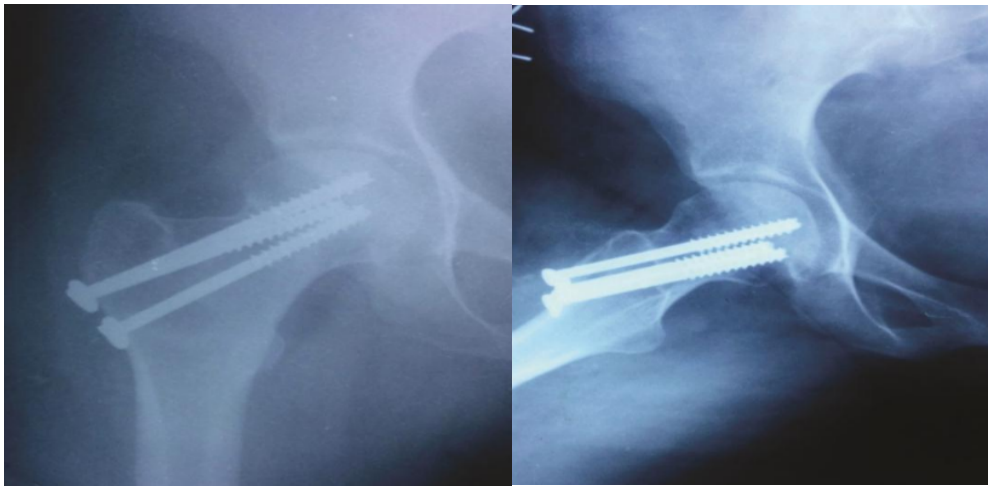
- 1 year follow-up




Case 2: 35Y/F A/h/o fall from height



- 1 year follow-up

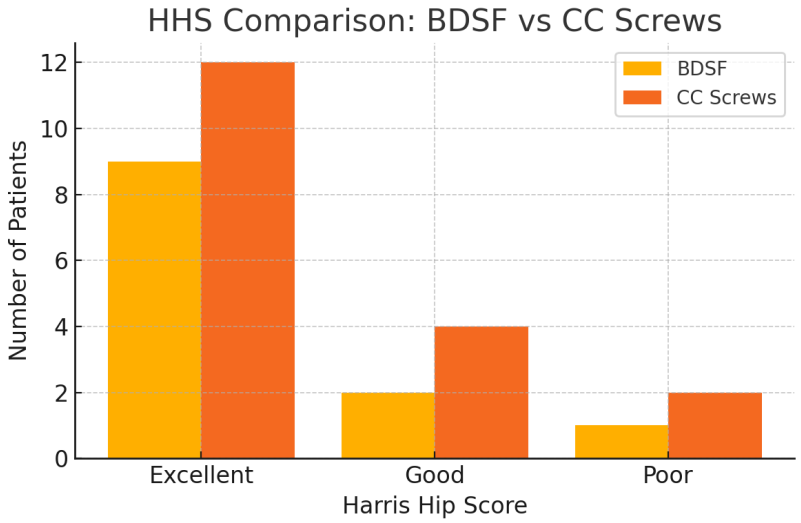


Functional Outcome – BDSF

- HHS Excellent: 9
- Good: 2
- Poor: 1

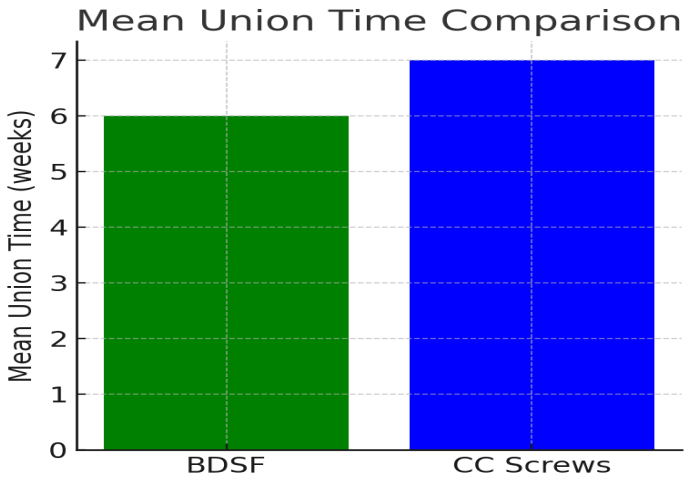
Functional Outcome – CC Screws

- HHS Excellent: 12
- Good: 4
- Poor: 2



Radiological Union

- BDSF: Mean union time = 6 weeks
- CC Screws: Mean union time = 7 weeks



Complications Observed

- BDSF: None
- CC Screws: 1 case of AVN, 1 case of non-union

Discussion

- BDSF group showed slightly better functional outcomes
- Faster radiological union observed in BDSF group
- Fewer complications noted

Biomechanical Rationale of BDSF

- Enhanced rotational and axial stability
- Improved cortical purchase
- Even distribution of stress

Literature Support

- Similar studies indicate benefits of BDSF
- Smith et al., 2022; Sharma et al., 2021
- Filipov O., 2011; Eur J Orthop Surg Traumatol 21(7):539–543.

Conclusion

- BDSF offers promising results for neck of femur fractures
- Faster healing and better early functional outcomes
- Merits further large-scale research

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